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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,217	12/29/2000	Nicole Klappholz	9-13528-122US	6983

20988 7590 10/20/2003
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EXAMINER

PATEL, ASHOKKUMAR B

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 10/20/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/750,217	Applicant(s) KLAPPHOLZ, NICOLE	
	Examiner Ashok B. Patel	Art Unit 2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-36 is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-36 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

1. Application Number 09/750,217 was filed on 12/29/2000. Claims 1-36 are subject to examination.

Specification

2. The disclosure is objected to because of the following informalities:
 - a. In Detailed Description of the Preferred Embodiment, Fig. 2, the timer Queue is identified by reference character "31". See page 10, line 28. In the drawing the reference character "30" identifies the timer queue. Appropriate correction is required.
 - b. In Detailed Description of the Preferred Embodiment, Fig. 7b, "the unlock process removes the lock flag" is identified by reference character "115". See page 18, line 30 and page 19, line 1. Reference character "116" identifies the "Remove Lock Flag" in Fig.7b. Appropriate correction is required.

Drawings

3. The drawings are objected to because the referenced character "68" is used to identify two items in Fig.5d, "Process Pending Call Lock" and "Time Slice Expired Flag Set". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Lotito et al. (hereinafter Lotito) (US 4,625,081).

Referring to claim 1, Lotito teaches:

- The system 100, col. 20, lines 15-22, incorporating a plurality of independent processors.
- The concurrent process operations are allowed to use the machine's resources, col. 44, lines 32-36.
- "In the system 100, simultaneous processing does occur as.....execute in parallel.", col. 44, lines 36-40.
- Defining process classes and assigning each process to process classes, col. 102, lines 54-68.
- "Each processor also has a firmware–resident executive system (REX) which organizes and manages the resources of the processor on behalf of both the system and the active processes within the system. The resident executive provides a wide range of functions ranging from wake-up diagnostics, interrupt handling, timer management, to input/output services.", col.20, lines 33-44.
- "process" which is a program and associated set of dynamic data provided execution time by REX, col. 101, lines 36-40.

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- The process class with attributes such as priority and other rights, col.102, lines 54-68.

Lotito clearly shows a system that includes all limitations of claim 1, where system resources are shared in parallel computing environment with a plurality of independent processors with REX defining execution time (execution time slice) for a process, process classes are defined and each process is assigned to a process class, process classes have attributes such as priority and other rights that can include completion of the process without interruption, and each system processor has a firmware-resident executive system which organizes and manages the resources of the processor including interrupt handling and time management (monitoring).

5. Claim 21 is a claim to a machine which performs the steps of the method of claim 1. Therefore, claim 21 is rejected for the reasons set forth above paragraph 4 for claim 1. With respect to the definition of rights and priorities as part of the process association of claim 21, see Lotito, col.102, lines 54-68 and col.110, lines 11-27.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 2-8, 11,12, 25-26, 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotito (US 4,625,081) in view of Frank et al. (hereinafter Frank) (5,790,851).

Referring to claims 2,3,and 4, Lotito teaches of a process class that can be assigned the required attributes such a priority and other rights, Col.102, lines 54-68 and col.110, lines 11-27. Lotito does not teach to call a lock procedure during execution. Frank teaches a "Lock" call which " specifies that a "lock" is desired over a particular shared resource by the process.", Col.1, lines 54-60. Frank also teaches to preserve the lock by a process as long as the process requires the lock by checking to see if the process is ready to release the lock (Unlock). See Fig.5 and Col.8, lines 15-29. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to add attributes to a process class to call for a lock procedure for a desired period, and the desired period as being an integer multiple of the execution time slice because "lock" procedure would allow the process execution for a predefined period of time and "unlock" procedure would allow the process to be terminated at any time.

Referring to claim 5, 6,7 and 8, keeping in mind what Lotito teaches and Frank teaches as indicated above, one also would have been motivated to make modification programmatically as in view of the suggestion in Frank (Fig.5) that lock procedure "be called as being applied repeatedly" by the same process and counting the lock states declared by the lock process and decrementing the lock states count each time the

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unlock procedure ("release the lock") is called, and declaring the process "Unlocked" when there exists no lock calls.

Referring to claims 11 and 12, keeping in mind what Lotito teaches and Frank teaches, as indicated above. Frank also teaches to preserve the lock by a process as long as the process requires the lock by checking to see if the process is ready to release the lock (Unlock). See Fig.5 and Col.8, lines 15-29. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to add an attribute to a process class to call for an unlock procedure after the completion of execution time slice, or continue process execution for a remainder of the time slice if the lock is released before the allocated time slice expires. Because this modification allows the process execution time management according to their rights and priority associated with each of the process classes.

8. Claims 25 and 26 are claims to a machine which performs the steps of the method of claim 2. Therefore, claims 25 and 26 are rejected for the reasons set forth in above paragraph 7 for claims 2,3 and 4.

9. Claim 28 is a claim to a machine which performs the steps of the method of claim 6. Therefore, claim 28 is rejected for the reasons set forth in above paragraph 7 for claims 5,6,7 and 8.

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10. Claim 29 is a claim to a machine which performs the steps of the method of claim

4. Therefore, claim 29 is rejected for the reasons set forth in above paragraph 7 for claims 2,3 and 4.

11. Claim 30 is a claim to a machine which performs the steps of the method of claim

3. Therefore, claim 30 is rejected for the reasons set forth in above paragraph 7 for claims 2,3 and 4.

12. Claim 31 is a claim to a machine which performs the steps of the method of claim

5. Therefore, claim 31 is rejected for the reasons set forth in above paragraph 7 for claims 5,6,7 and 8.

13. Claims 9,10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotito (US 4,625,081) in view of Frank (US 5,790,851) as applied to claims 2-8, 11,12, 25-26, 28-31 above, and further in view of Gans et al. (hereinafter Gans) (US 5,835,762).

Referring to claim 9 and 10, Keeping in mind the teachings of Lotito and Frank, Frank does not teach setting lock flags at the locking instances and at the unlocking instances, and assigning flags the indicative values. Lotito teaches flags as being two types, one of which is binary (Boolean), col.110, lines 25-40. Gans teaches flag field which can contain any number of flags to further define a process instance, col. 6, lines 1-2. Gans

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also teaches the flag field is used to specify the desired state (of the process) during the designated time, col. 7, lines 32-33. Gans further goes on explaining, by giving an example, the flag value that may indicate the state of a process. Col.7, lines 33-40. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to modify Frank and set lock flag with the values indicating the states of the process; that is a first value when the process is declared locked and a second value when the process is unlocked. And as Gans teaches the value is indicative of the desired state during the designated time, which can be easily represented by variables such as binary (Boolean) variables as taught by Lotito.

14. Claim 27 is a claim to a machine which performs the steps of the method of claim 9. Therefore, claim 27 is rejected for the reasons set forth in above paragraph 13 for claims 9 and 10.

15. Claims 13, 14, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotito (US 4,625,081) as applied to claims 1 and 21 above, in view of Elnozahy (US 6,421,701).

Referring to 13 and 14, keeping in mind the teachings of Lotito, Lotito does not teach slice counter and storing execution time slice and an initialization of time slice counter by a scheduler that schedules the process to be executed by the processor. Elnozahy teaches “scheduling by “instruction slice “means scheduling a thread based upon a

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number of instructions executed and not based upon a time of execution or number of execution cycles.”, Col.5, lines 43-46. Elnozahy also teaches, “The instruction slices is implemented with the help of instruction counter 39.....described.”, Col. 5, lines 46-57. Elnozahy further teaches “Scheduler allocates instruction slices on a CPU, where instruction slices serves as a scheduling unit....as already described.”, Col. 5, lines 39-57. Therefore, one would have been motivated to make addition to Lotito as suggested by Elnozahy to derive the scheduling, counter and counter initialization by a scheduler based upon a time of execution, that is the execution time slice, to make sure that processes do not monopolize resources.

16. Claims 22, 23 and 24 are claims to a machine which performs the steps of the methods of claims 13 and 14. Therefore, claims 22 and 23 are rejected for the reasons set forth in above paragraph 15 for claims 13 and 14.

17. Claims 15- 20 and 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lotito (US 4,625,081) in view Anderson (US 5,465,335).

Referring to claims 15,16 and 17, Lotito teaches, as indicated in 1. above, a plurality of independent processors that execute processes simultaneously. Lotito also teaches REX performing the setting and resetting the programmed interval timer, and by loading the programmed interval timer with the appropriate count, REX selects a time interval requested by a process, col. 109, lines 53-68 and col.110, lines1-9. Lotito does not

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teach to queue processes in a wait state until a predetermined process removal time has expired and adding a new processes to the queue.

Anderson teaches:

- An event queue which includes a plurality of word stores for storing task names that wait the occurrence of an event to be placed in the processor queue. Col.3, lines 13-16 and Fig.1.
- " five commands i.e. Schedule, Suspend, Signal, Wait, and Delay." Col.3, line 55. It further teaches "through these commands, and combination s thereof ,operating parameters." Col.3, lines 56-59.
- Although Anderson accomplishes queuing by hardware configuration, it suggests accomplishing the "queuing" in a software environment, Col.3, lines 59-62.

Lotito's plurality of independent processors that execute processes simultaneously requires an infrastructure or a means such as a REX, as suggested by Anderson, to organize and feed the processes to be executed simultaneously so that access to computing resources is optimized. Anderson also suggests commands for substantial improvement in the processor's operation parameters and, suggests accomplishing this alternatively in a software environment. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to organize and maintain a timer queue in a software environment, analogous to Anderson's event queue, which holds a process for a duration of time before moving the process forward for execution, schedule addition of new processes to timer queue, schedule re-ordering

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the timer queue each time the change in it's content occurs to ensure that access to computing resources is optimized.

Referring to claims 18,19 and 20, Lotito teaches, as indicated in 1. above, a plurality of independent processors that execute processes simultaneously. Lotito does not teach to queue processes in a wait state until a predetermined process removal time has expired and adding a new processes to the queue. Also Lotito does not teach to placing processes removed from the timer queue to a ready queue for execution by a one of the processors. Anderson teaches, in addition to the above, of a processor (CPU) queue that includes a plurality of word stores, each word store storing a task name, in execution priority order, that is ready for processing. Col.3, lines 10-14 and Fig.1.

Lotito's plurality of independent processors that execute processes simultaneously requires an infrastructure, as suggested by Anderson, to organize and feed the processes to be executed simultaneously so that access to computing resources is optimized. Anderson suggests to place a plurality of word stores from event queue to CPU queue in execution priority order, that is ready for processing. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to organize and maintain a ready queue in a software environment, analogous to Anderson's CPU queue, which holds process classes to organize the processes associated with their respective process classes for execution, schedule addition of new processes to ready queue because the time management in a shared memory parallel processing environment is crucial to utilize system resources in a most efficient way.

18. Claims 32,33,34,35 and 36 are claims to a machine which performs the steps of the methods of claims 15,16,17,18 and 19. Therefore, claims 32,33,34,35 and 36 are rejected for the reasons set forth in above paragraph 17 for claims 15,16,17,18,19 and 20. With respect to the definition of scheduler as part of the claims 34, 35 and 36, see paragraph 15 for claims 13 and 14.

19. Applicant's Information Disclosure Statement filed March 22, 2001 indicating no particularly relevant references were discovered in a prior art search has been received. A copy of a fax that appears to be a search request from Pino & Associates to Patent Providers was also included in the application papers. Any information as to its relevance to this application is requested.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (703) 305-2655. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Grant can be reached on (703) 308-1108. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



abp

September 22, 2003



WILLIAM GRANT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

10/14/03